

# Claims

- [c1] A method of aligning a set of lithographic patterns to one another on a substrate during a lithographic process, said substrate having a front side surface and a backside surface, said method comprising:  
providing a symmetric data image on said front side surface such that said symmetric image is identical whether viewed from said front side or said backside;  
generating a pattern of said front side surface image on said substrate;  
flipping said substrate;  
detecting said generated pattern; and  
aligning subsequent lithographic process steps to said detected generated pattern.
- [c2] The method of claim 1 wherein said symmetric data further comprises integrated circuit chip data.
- [c3] The method of claim 1 wherein said symmetric data further comprises kerf data.
- [c4] The method of claim 1 wherein said symmetric data comprises both integrated circuit chip data and kerf data within a single optical field.

- [c5] The method of claim 1 comprising generating said pattern such that said generated pattern includes alignment marks.
- [c6] The method of claim 1 including bonding said substrate to a mechanical support structure.
- [c7] The method of claim 5 further comprising having said alignment marks on a trench level or a device isolation level.
- [c8] The method of claim 5 further comprising mirroring said alignment marks symmetrically about an axis.
- [c9] The method of claim 2 comprising defining an original image of a portion of said symmetric data by a plurality of coordinates.
- [c10] The method of claim 9 including defining four corner coordinates of said plurality of coordinates as  $(0, Y_{\max})$ ,  $(X_{\max}, Y_{\max})$ , an origin  $(0, 0)$  and  $(X_{\max}, 0)$ .
- [c11] The method of claim 10 further comprising mirroring said portion of said symmetric data about an axis.
- [c12] The method of claim 11 wherein said axis is an ordinate axis.
- [c13] The method of claim 11 further including:

multiplying coordinates in one dimension by negative 1 to create coordinates of a mirror image of said portion of said symmetric data; and  
merging said mirror image with said portion of said symmetric data.

[c14] The method of claim 13 wherein said four corner coordinates are represented by  $(0, Y_{\max})$ ,  $(-X_{\max}, Y_{\max})$ ,  $(0, 0)$  and  $(-X_{\max}, 0)$ , after said multiplying step.

[c15] The method of claim 13 further including adding a constant value to said coordinates of said merged data such that said origin is aligned with a lower left corner.

[c16] The method of claim 15 wherein said constant value comprises  $X_{\max}$ , such that said four corner coordinates of said merged data are further represented by  $(0, Y_{\max})$ ,  $(2 \cdot X_{\max}, Y_{\max})$ ,  $(0, 0)$  and  $(2 \cdot X_{\max}, 0)$ .

[c17] The method of claim 5 wherein said alignment marks are on a trench level or device isolation level.

[c18] The method of claim 1 wherein said generated pattern is detected by removing a portion of said substrate's backside.

[c19] The method of claim 18 wherein said alignment marks are detectable on said backside surface after said re-

moval of said a portion of said substrate's backside.